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How the National Mental Health Act Works

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The National Mental Health Act was conceived by people who had a deep appreciation of the emotional difficulties of their fellow men. It came into being because it had the wide-spread support of people who wanted to see some action taken that would help resolve some of our problems. A number of acute pains are associated with the early growth and development. There are some differences of opinions of those greatly interested as to how rigid or permissive should be the control of this infant. Some ask why rigid Federal control of assistance activities is not extended to State and local activities. Others are reluctant to accept assistance because of a fear of control. There are those who feel that growth has been too slow, a few who think that a diagnosis of hyperpituitarian is indicated.

The National Mental Health Act provides for two separate and distinct types of activities—operational and assistance. The operational activities are those performed and directly controlled by the Public Health Service. They are limited to research in the National Institute of Mental Health, and demonstrations. The assistance activities are concerned with aiding agencies and individuals to perform projects over which the Public Health Service has no direct control. Assistance activities include research grants, training grants and grants for community services.

It is apparent that the chief purpose of the National Mental Health Act is to assist nonfederal agencies in the performance of their activities in the fields of research, prevention, and treatment. It was not intended to have the Federal Government assume authority and control over such activities. The National Mental Health Act is a mechanism which can be used to initiate or implement preventive and therapeutic services, to increase knowledge with regard to emotional disorders, and to increase the number of personnel trained in the

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fields related to mental health. It is a mechanism that can be used to implement a national mental health program which is the aggregate of all the programs of all the agencies whose activities relate to mental health. Such a national mental health program evolves from and is dependent upon participation of individuals and organizations of all types—local, county, State, national, private and public.

Operational Activities

To carry out the responsibilities for research under the National Mental Health Act, there is, at the present time, under construction on the grounds of the National Institutes of Health in Bethesda, Maryland, a clinical research center which will include the facilities of the National Institute of Mental Health. It is hopefully anticipated that the research center will be completed by 1950. In preparation for the opening of this Institute, the Public Health Service is supporting a number of research fellows, expecting that from the group it will be possible to obtain some of the staff of the Institute.

In addition to the research that will be carried on within the National Institute of Mental Health, there is a need for demonstration projects or field studies. One such project, a clinic, is now in operation in Prince Georges County, Maryland. This first project has as its general objective the study and investigation of the best methods of incorporating mental health services in a local public health program. Since 31 of the 53 agencies designated by the States to be the State Mental Health Authorities are health departments, and since 23 of these health departments had no mental health program prior to July 1947, it was important to have a demonstration of this particular type. In addition to the study of the best methods of incorporating mental health services in a local and State public health program, this project, because it was not committed to supplying all the clinical services demanded by the community, can engage in other areas of activity related to the field of mental health.

The usefulness of mental hygiene clinics as a therapeutic service has been demonstrated both satisfactorily and unsatisfactorily for about 20 years. These mental hygiene clinics have been overburdened by the number of patients needing treatment. Not only has it been impossible in most instances to satisfy the needs of a community with regard to treating the sick, but because of the lack of time and, in some cases, the narrowness of viewpoint, such clinics have been unable to do any significant amount of work of a really preventive nature. This is true if we regard prevention in its true sense and not in the sense of early treatment of someone already ill.

What can a clinic staff do that is of value in preventing mental

illness? Would it be profitable for the staff to devote a considerable proportion of its time to the education of key community groups? One significant activity of this kind is being carried out by the nurse on the clinic staff. This nurse has had training in both public health nursing and in mental hygiene. Almost all of her time is spent outside the clinic working with public health nurses and mothers in prenatal and well-baby clinics. This nurse is not supplying therapeutic services for children with emotional problems, but the mothers and nurses are being given the opportunity to acquire an understanding of the emotional needs of children and to learn to handle adequately the everyday problems of the mother-child relationship. One can reasonably speculate that the incorporation of this kind of activity as a part of all prenatal and well-baby services might produce more emotionally healthy children who would never need clinical therapeutic services.

Another type of demonstration project sponsored by the Public Health Service during the past year was institutes for physicians. One such institute was held in Lexington, Kentucky, another in Richmond, Virginia, and a third in Denver, Colorado. These institutes, supported by demonstration funds, were undertaken with the objective of furnishing information on psychiatry to physicians in general practice. In two instances, the physicians attended a series of lectures and in the other institute, a limited number of physicians received didactic training and also worked with patients. Plans are being made for an institute for a limited number of pediatricians in Minneapolis. These institutes have been sponsored by the State Mental Health Authority and the State Medical Association in each location.

Assistance Activities

As stated, assistance procedures have to do with activities over which the Public Health Service has no direct control. Three types of grant programs are included—research grants, training grants, and grants for community services.

Figure 1 diagrams the procedures and the groups involved in the grant activities. Requests for grants-in-aid to the States for community services originate with the agency designated by each State to be the State Mental Health Authority. The program is sent to the District Office of the Public Health Service for approval after which it is reviewed by the Mental Hygiene Division headquarters. The nonadministrative policies relating to the community services program are based in a large measure on recommendations of the National Advisory Mental Health Council and originate in the Community Services Committee of that Council. The amount of

money available to each State is determined by a formula based by law on population, financial need, and extent of the problem. The State is required to match the Federal grant funds with State or local public funds expended for the same purpose. The matching requirements are \$1 of State funds for each \$2 of Federal funds.

Research grant requests originate with institutions, hospitals, or individuals and are sent to the Public Health Service. The project formulated is referred to the Research Committee, which, after study, makes its recommendation with regard to the project to the National Advisory Mental Health Council. If the Council approves the project, a grant can be made by the Service. The method of procedure on training grants, both for graduate and undergraduate grants and stipends, is similar to that for research grants.

The Public Health Service has consultative personnel on duty in most of the district offices to assist the States with advice on the formulation of programs, program content, and the other problems. It is also the responsibility of the consultants to conduct program reviews to ascertain the conformance with the plans on which grants were based, and the progress in carrying out such plans.

Research Grants

Table 1 summarizes the information with regard to grants for research and for research fellowships for the period July 1947 through

Table 1. Research grants and fellowships

Year	Grants	Amount	Fellows	Amount	Total
1948.....	38	\$373, 664	20	\$64, 822	\$438, 486
1949.....	29	410, 443	7	26, 300	*436, 743

*Total available for 1949 is \$570,000.

September 1948. The difference between the total amount granted in fiscal 1949 and the amount available will be used for grants approved during the balance of the fiscal year which ends July 1949.

Training Grants

Table 2 summarizes the data with regard to grants for training and

Table 2. Training grants and stipends—1948

	Grants	Amount	Stipends	Amount	Total
Psychiatry.....	22	\$333, 450	81	\$187, 010	\$520, 460
Clinical psychology.....	19	145, 600	40	64, 833	210, 433
Psychiatric social work.....	11	139, 595	50	72, 000	211, 595
Psychiatric nursing.....	10	126, 224	59	109, 600	235, 824
Totals.....	62	744, 869	230	433, 443	1, 178, 312

stipends made during fiscal year 1948. These were for graduate training programs in psychiatry, psychiatric social work, clinical psychology, and psychiatric nursing. Table 3 summarizes the same information for fiscal year 1949.

Table 3. *Training grants and stipends—1949*

	Grants	Amount	Stipends	Amount	Total
Psychiatry.....	24	\$408, 859	72	\$234, 650	\$643, 509
Clinical psychology.....	28	230, 710	55	95, 432	326, 142
Psychiatric social work.....	18	204, 280	62	111, 000	315, 280
Psychiatric nursing.....	16	158, 605	82	144, 961	303, 566
Totals.....	86	1, 002, 454	271	586, 043	1, 588, 497

Beginning July 1949, funds will be available for grants to medical schools for undergraduate training programs in psychiatry. Applications have been received and will be acted upon by the training committee and the council in December. The last Congress approved contract authorization for this purpose in order to provide continuity of the programs and assurance of continued support.

Grants to States

In accordance with the provisions of the National Mental Health Act, each State was requested to designate one agency that would

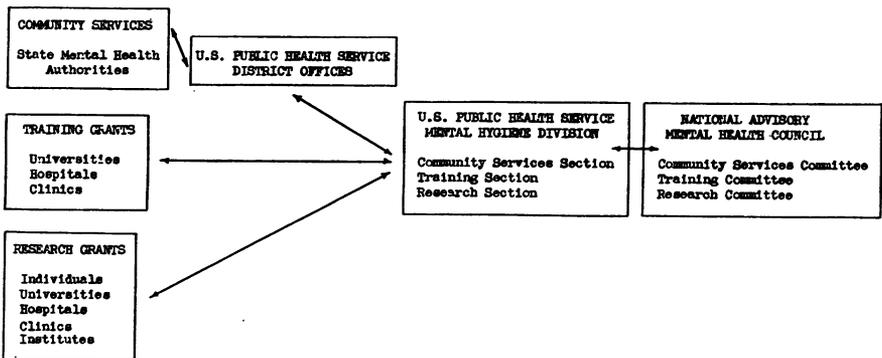


Figure 1. Grants procedure.

formulate and be responsible for and have control of the State mental health program. This agency is called the State Mental Health Authority. The Public Health Service deals with this designated agency on all matters pertaining to the State program. Figure 2 shows the agencies designated by the States.

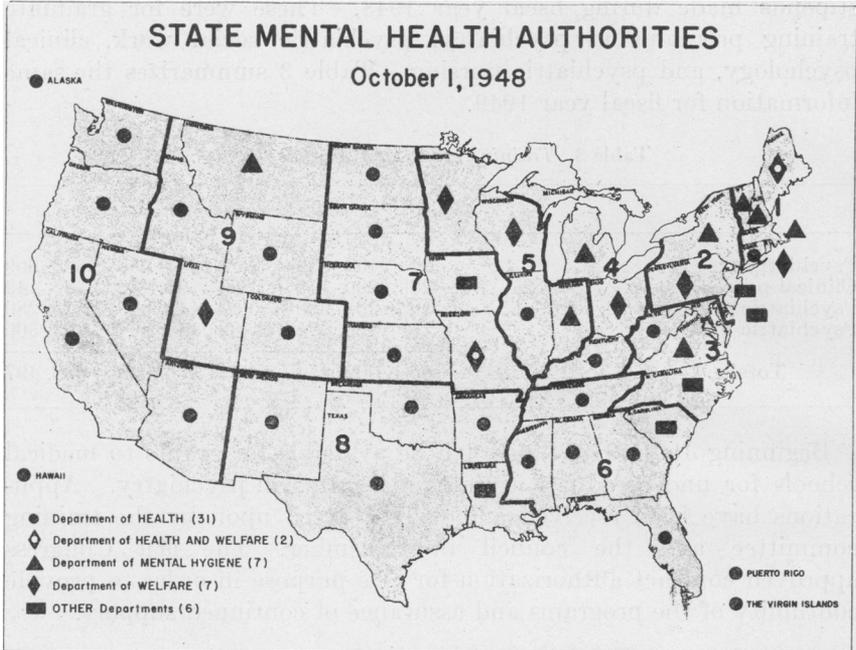


Figure 2.

Grant-in-aid funds became available in July 1947 and during the first year of operation, 46 States formulated programs and received grants.¹ It is particularly significant that of these 46, 24 had no program in the designated agency prior to July 1947. This means that the mental health program had received no official assistance, but had been recognized and when funds became available, action was taken.

Figure 3 indicates the types of activities included in the State programs that were proposed during fiscal year 1948. These activities group themselves into five categories—administrative, professional services, clinic services, preventive and educational services, and training.

Three million dollars were available for State grants-in-aid in fiscal 1948, and of this amount, plans were approved that carried budgets totalling \$2,133,360. The amounts budgeted for the various categories of activities are shown in figure 4. The largest amount was for clinic services. The money budgeted for training was for the financial support of trainees who would return to work in the State mental health programs. The amount budgeted for preventive and educational activities is very small. Even if one recognizes that part of the function of the staff of clinic and other professional personnel is in this

¹ Five States (Alabama, Indiana, Missouri, Pennsylvania, and Wyoming) and two territories (Puerto Rico and the Virgin Islands) did not submit plans.

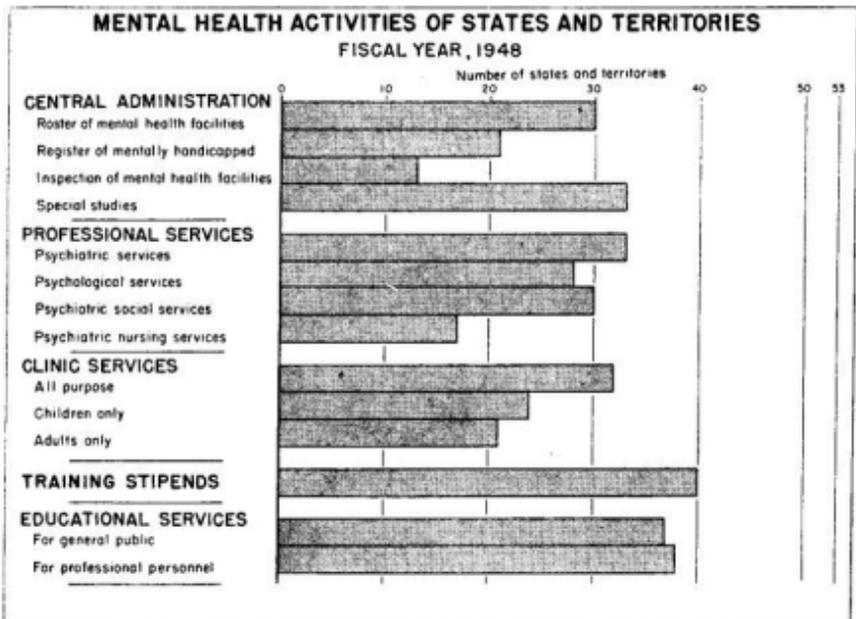


Figure 3.

field, it appears that too little attention is being paid to these activities.

One type of assistance given to the States is in the form of surveys of mental health facilities in the States. The paucity of this type of information is surprising. Each State survey requires from one week to a month to gather the data, and the Mental Hygiene Division has one medical officer who devotes his entire time to this activity.

Quarterly expenditure reports of the States indicate that there was considerable delay in initiating programs during the first year of operation. Only 19 States utilized funds during the first quarter. Many States were unable to formulate programs until later in the year, and seven States and territories were unable to do so at any time. As the year went on, more and more States utilized the funds budgeted and a total of \$1,164,217 was expended and obligated (figs. 5 and 6).

A number of factors limited the amount of money that could be used in community service programs during this first year. There was the delay incident to formulating and initiating new programs; there was the difficulty of obtaining trained personnel because of shortages and low salaries; there was an inability to utilize funds because of the necessity for having employees under a merit system; in some States, legislation was required to permit the State mental health authority to reallocate funds to other agencies; there were delays in designating the responsible State agencies.

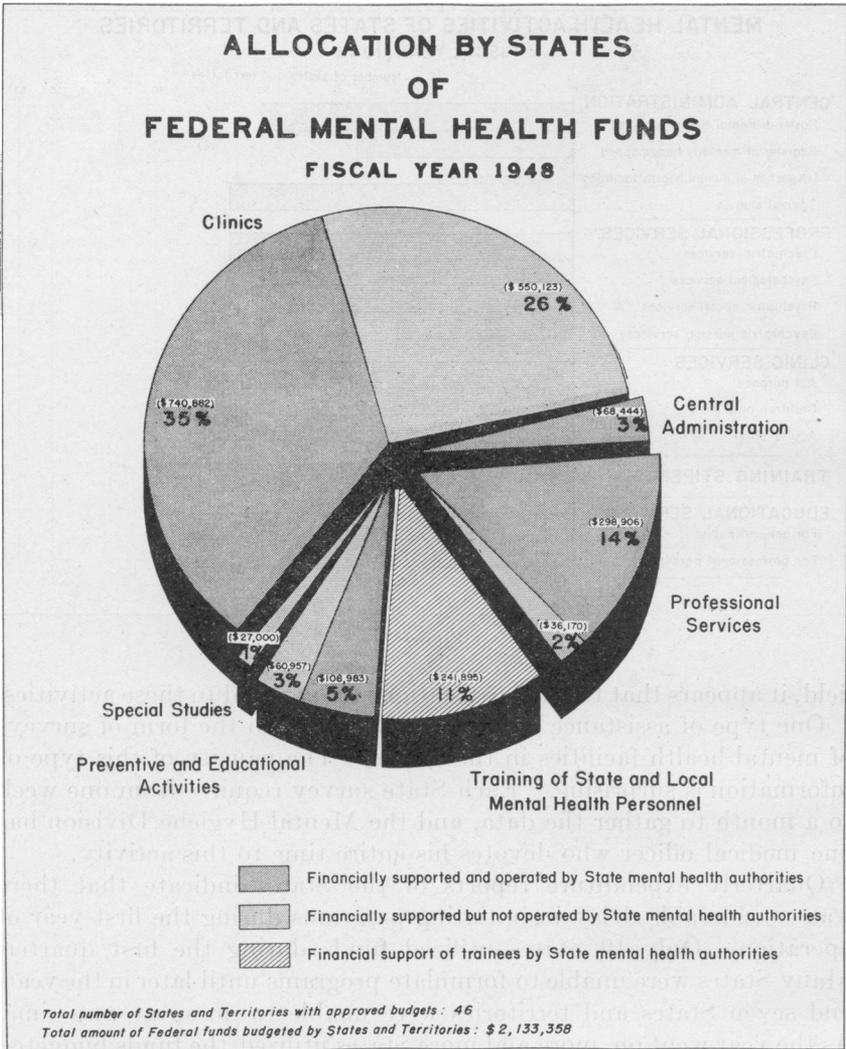


Figure 4.

Even though all of these factors were relatively unmodifiable, one is impressed by the opportunities that were not fully exploited. There are strong indications that activities of existing clinics in some States could have been increased if funds had been reallocated by the State mental health authorities to these clinics. Additional trainees could have been supported who would have had their training completed by last July or next. In some instances there was a tendency to limit the use of funds to one agency rather than bringing into the program other interested groups. More aggressive action by indi-

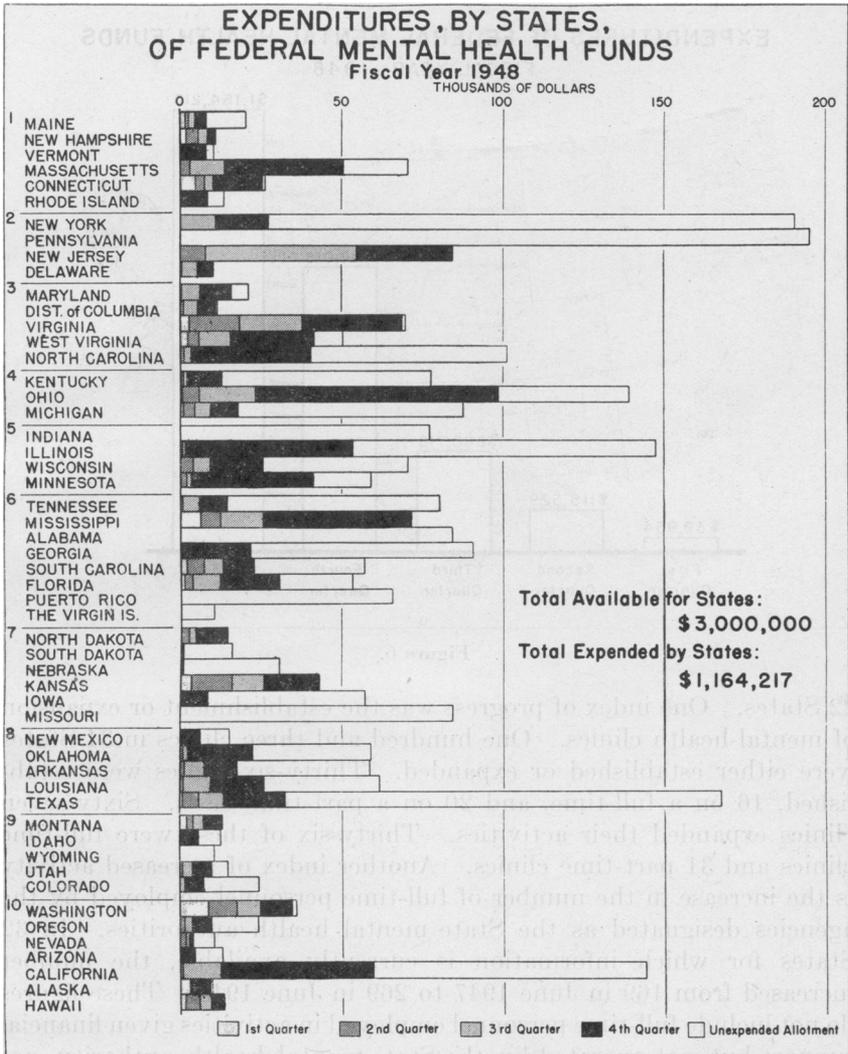


Figure 5.

viduals or groups in some States would have resulted in additional clinical services being provided for people in need of treatment. There are a number of States in which programs would be more satisfactory if an advisory board would assist the State mental health authority in the formulation of plans, and would support and help activate these plans.

Some encouraging results were obtained. Mental-health programs were initiated in the responsible agencies in 24 States. The existing programs were expanded to a small or large degree in an additional

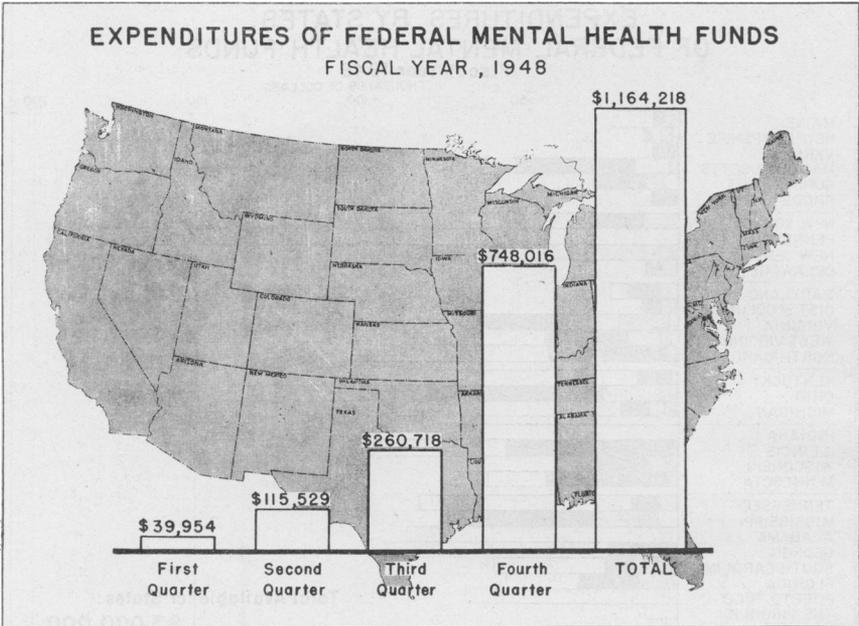


Figure 6.

22 States. One index of progress was the establishment or expansion of mental-health clinics. One hundred and three clinics in 34 States were either established or expanded. Thirty-six clinics were established, 16 on a full-time, and 20 on a part-time basis. Sixty-seven clinics expanded their activities. Thirty-six of these were full-time clinics and 31 part-time clinics. Another index of increased activity is the increase in the number of full-time personnel employed by the agencies designated as the State mental health authorities. In 32 States for which information is currently available, the number increased from 169 in June 1947 to 269 in June 1948. These figures do not include full-time personnel employed in activities given financial support but not operated by the State mental health authority, nor does it include any part-time personnel. Assumption of responsibility by the States is evidence by such occurrences as the recent biennial appropriations of Mississippi and Montana of \$50,000 each for mental-health activities.

Prevalence of Antibiotic-producing Coliform Organisms

—Further Studies—

By S. P. HALBERT, M. D. and M. GRAVATT, M. S. P. H.

Gratia and Fredericq, in Belgium, have studied large numbers of coliform organisms capable of antibiotic production *in vitro* (1, 2, 3, 4, 5). Heatley and Florey demonstrated antibiotic production by a strain of *Escherichia coli* isolated from cat feces in England (6). Previous publications from this laboratory have described the prevalence and characteristics of antibiotic-producing fecal coliform organisms isolated from humans in Texas, and in New York State (7, 8, 9, 10). Little information is available, however, as to whether such antibiotics are produced *in vivo* in the intestinal tract. Because of the possible implication of such microorganisms in the recovery from and resistance to *Shigella* infections, the following study was undertaken to shed light on this question.

Materials and Methods

The fecal lactose-fermenting strains were isolated from stool specimens obtained from 108 human adults. Sample material was streaked onto SS and MacConkey¹ plates, and usually 20 isolated colonies were picked to fresh medium. These were later tested for their inhibitory properties on Proteose No. 3 agar plates against a strain of *Shigella paradysenteriae* Flexner III, known to be highly susceptible to such organisms. In most instances, equal numbers of strains were taken from each medium. The details of the techniques used are recorded in another report (7). Nonantagonistic strains produced no effect on the substrate *Shigella* growth; slightly antagonistic organisms showed inhibition zones up to 2 mm. wide; and highly antagonistic ones produced zones from 2 to 6 mm. wide.

Saline extracts were made of 110 stool specimens from 102 of the subjects. These were prepared by thoroughly mixing 3 ml. of physiological saline solution per gram of wet stool, extracting at room temperature for one-half hour, and centrifuging. The supernates were sterilized at 62° C. for one-half hour, and later tested for their inhibitory activity on solid medium (8).

From the Syphilis Experimental Laboratory, Public Health Service, University of North Carolina, Chapel Hill, North Carolina.

¹ The media used throughout in this study were obtained from the Difco Laboratories.

The 108 individuals of this series were from two groups; 40 subjects were students at the University of North Carolina in Chapel Hill, and 68 were patients undergoing penicillin treatment for early syphilis at the Eastern Medical Center in Durham.² The large majority of this latter group were Negroes. The subjects from Chapel Hill had been resident there for at least 6 months, while the individuals at Durham were there temporarily for a 10-day course of antisyphilitic therapy. This latter group actually made their homes in about 35 communities scattered over a large part of North Carolina.

There were no significant differences in the age distribution of the various groups. About 80 percent of the individuals were young adults between 17 and 27 years of age, while practically all were between 17 and 35 years.

None of these cultures revealed the presence of pathogenic enteric organisms. The specimens from Chapel Hill were derived from individuals with various gastrointestinal complaints, while no recent history of diarrheal disease was recorded in the group from the Eastern Medical Center. It may be pointed out here that Nelson et al. (10) have reported the finding of large numbers of *Shigellae* in the military population in the southeastern United States during 1943 and 1944. These data suggest that high prevalences also occur in the civilian population of this area.

Results

Prevalence of Antagonists by Strain

Of a total of 2,105 strains of coliform organisms tested for their inhibitory properties, 5.4 percent were highly active and 19.4 percent slightly active. The results are summarized in table 1.

The over-all incidence of greatly active strains is quite similar to the values found for the Texas and New York groups previously reported (10.0 and 4.4 percent, respectively). However, the slightly active organisms are much more numerous than in the previous series (8.3 and 7.3 percent, respectively).

Comparison of the prevalences of both types of antibiotic producers in the Chapel Hill and Durham groups reveals significantly higher levels in the former. The probability (P) was 1:1,000 that the observed distribution is due to chance alone, using the X^2 test. The importance of this difference is not clear, however, in view of the higher antagonist carrying rate in the Durham individuals.

It is of interest that the over-all yield of slightly active strains was

² The authors are grateful to Dr. Ralph Hogan, and Dr. E. Hedgepeth for arranging the transfer of the specimens tested.

Table 1. Incidence of antagonistic coliform strains

Group	Medium	Total number of strains tested	Coliforms	
			Slightly antagonistic	Greatly antagonistic
Chapel Hill.....	SS.....	302	65	29
	MacConkey.....	467	112	56
Eastern Medical Center (females)....	SS.....	408	83	18
	MacConkey.....	214	9	6
Eastern Medical Center (males).....	SS.....	389	102	5
	MacConkey.....	325	37	0
Totals.....	SS.....	1,099	{ 250 (22.8%)	{ 52 (4.7%)
	MacConkey.....	1,006	{ 158 (15.7%)	{ 62 (6.2%)
	2,105	{ 408 (19.4%)	{ 114 (5.4%)

much greater from SS than from MacConkey ($P = < 1:1,000$). At the same time, no significant difference was observed in the yields of highly antagonistic strains from the two media ($P = 1:5$). Exactly the opposite effect was observed in the New York State series.

Antibiotic Production by Sample Strains

Tests were made for the production of antibiotic substances by sample strains from different individuals of this group, using the same technique previously described. Similar results were obtained. All 19 of the highly active strains produced inhibitory crude supernates, mostly with broth dilution titers of approximately 1:500. Two of these strains yielded supernates of only slight activity. All 16 strains nonactive in the living state produced nonactive supernates, while 10 of 16 slightly antagonistic strains yielded active crudes of low potency. Tests performed with these slightly active organisms on media containing suitable pH indicators revealed that local changes in pH cannot account for the inhibition zones observed. Although it is quite possible that some other nonspecific mechanism may explain these small inhibitory effects, further search will probably reveal antibiotic production by all of these slightly active strains.

Stool Extracts

Of the 110 stool extracts assayed, only 15 produced zones of inhibition of the substrate *Shigella* growth. In no instance was the inhibited area large or clean cut. The width of the zones ranged from a trace to about 2.5 mm., the majority being only traces. Table 2 summarizes these tests. No relationship was observed between the inhibitory activity of the stool extracts and the antibiotic producing capacity of the coliform flora which made up the stool. This com-

pletely random distribution strongly suggests that the inhibitions are not due to coliform antibiotics. Moreover, several stool samples whose coliform flora consisted exclusively of potent antibiotic producing organisms yielded extracts of no inhibitory activity whatsoever.

According to the previous studies with a typical antibiotic produced by one of these organisms (8), a zone 1 mm. wide would represent a

Table 2. Results of the assays of stool extracts in relation to the coliform flora of the samples

Coliform antagonists in stool	Type of coliform antagonists in stool	Stool extracts	
		Noninhibitory	Inhibitory
Present.....	Slight.....	42	7
	Great.....	11	2
	Both types.....	6	1
	Total.....	59	10
Absent.....		36	5

solution inhibitory in broth in a dilution of 1:2, while a zone 2 mm. wide would indicate a dilution titer of about 1:6. It may thus be seen that this assay technique is rather sensitive to low concentrations of these substances. No studies have yet been made on the nature of the inhibitory material present in the stool extracts.

Prevalence of Antagonist Carrying Individuals

In table 3, it may be seen that of the 108 individuals included in the study, 67 revealed the presence of antagonistic coliform organisms.

Table 3. Prevalence of individuals carrying antagonistic coliform strains

Group	Total number individuals	Individuals with			Percent individuals carrying active strains
		Slight antagonists	Great antagonists	Both types antagonists	
Chapel Hill.....	40	11	7	3	53
Eastern Medical Center:					
Females.....	32	16	4	4	75
Males.....	36	20	1	1	61
Total.....	108	47	12	8	62

This value of 62 percent is strikingly higher than those obtained previously (25 percent for Texas, and 30 percent for New York). This may merely be a result of the larger number of strains tested from each subject, 20 in this series, as compared to 8 in the others. If it does represent a true difference, however, the older age of these individuals, as well as the geographic location may be the important factors contributing to the high rate.

The concentration of such active organisms in the flora of each individual revealed the same wide range as previously. Only 9 of the 67 subjects carrying active strains showed a homogeneous population in this respect. Eight of these nine subjects were of the Chapel Hill group.

Repeat Cultures

It was possible to examine extra stool specimens from 6 individuals at intervals of several days to several weeks. All except one revealed the same type of coliform organisms on the repeat tests. This subject possessed 100 percent highly active strains on the first occasion; 10 days later, 95 percent were highly active, and 5 percent nonantagonistic; 3 weeks after that, all the strains were nonantagonistic. It is of great interest that this individual developed a hookworm infestation (*Necator americanus*) about 10 days prior to the first stool examination. The infestation was present at the time of the first two cultural examinations, but had been cured 2 weeks prior to the last.

Discussion

The high prevalence of antibiotic producing coliform organisms in a sample of the adult population of North Carolina is very similar to analogous observations made in Texas and New York State. These findings, together with the demonstration of large numbers of such bacteria in Belgium by Gratia and Fredericq suggests their universality.

The tests made with stool extracts indicate that active antibiotic is not excreted in the feces. In spite of this, it is quite conceivable that antibiotic is produced *in vivo*, but is inactivated within the fecal matter. Studies of material obtained higher within the large bowel might shed light on this important question. If it can be demonstrated that active antibiotic is actually produced within the lumen of the large intestine, the positive significance of these organisms in enteric infections would be strongly supported.

Summary

1. A survey has been made of antibiotic producing capacities of fecal lactose fermenting bacteria from an adult population in North Carolina. Of the 2,105 coliform strains examined, 24.8 percent were active in this respect. Of the 108 individuals included in the study, 62 percent carried such active strains.

2. Tests made with aqueous stool extracts from these subjects failed to reveal evidence for antibiotic production *in vivo*. Many of these stools contained large numbers of coliform strains shown to possess the ability to produce antibiotics *in vitro*.

3. The high prevalence of such strains in three widely separated sections of the United States, together with reports of such strains from Belgium and England, suggest that they are universally distributed.

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Effect of Smallpox Vaccination on the Outcome of Pregnancy

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This report is a by-product of a study of the relation of infections and illnesses occurring during pregnancy to the incidence of abortions, stillbirths, congenital malformations, prematurity and infant deaths. All women who are less than 4 months pregnant at admission to the antepartum clinic of the Sloane Hospital for Women are included in the study, which was begun October 1, 1946. Each woman is followed through her pregnancy with a detailed history of all illnesses which occur. The infant is examined at birth for congenital abnormalities and is reexamined at the ages of 6 months and 1 year for physical and mental development and for congenital abnormalities which were not evident at birth. Autopsies are performed in practically all cases in which fetal or infant deaths occur.

Conservative standards are observed in classifying congenital malformations and no cases are so classified if there is any doubt as to the presence of an abnormality. Every infant is X-rayed (skull and chest) shortly after birth and a special ophthalmological examination is made to detect abnormalities which might be missed in the usual clinical examination. In stillborn infants and those who die after being born alive, autopsy findings form the basis for classification. Clinical signs such as the presence of unexplained cyanosis or even the presence of a persistent and loud precordial murmur are not accepted as adequate evidence of a congenital cardiac abnormality unless the diagnosis is confirmed roentgenographically. Minor anomalies, such as small hemangiomas of the skin, are not included as congenital malformations.

The occurrence of nine cases of smallpox in the spring of 1947 in New York City and the subsequent mass vaccination of an estimated 80 percent of the total population (1) afforded an opportunity to utilize the data collected in this study to evaluate the effect of smallpox vaccination on the outcome of pregnancy.

Published evidence on the effect of smallpox vaccination during pregnancy is meager. Welch (2) observed in 1877 that if the mother

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*Statistician, American Heart Association.

has smallpox the pregnancy may terminate prematurely or the infant may be stillborn or lost before the stage of viability. During the following decade Gast (3) and others (4, 5) found no disturbance of pregnancy as a result of vaccination, but they did not consider the occurrence of congenital malformations. Lynch (6), 1932, stated that immunity is seldom transmitted to the fetus and that the procedure rarely disturbs the pregnancy. Since there was no positive contraindication in the literature for vaccination during pregnancy, it was decided at the Sloane antepartum clinic that the wisest policy was to protect the women against smallpox. Accordingly, vaccination was offered to all clinic patients who would accept it.

At the time of the mass smallpox vaccination in New York City in April 1947 there were 623 women being followed in the study. Of these, 512 were vaccinated and 111 were not vaccinated. An additional 270 women who were pregnant at the time of the mass vaccination were later admitted to clinic and to the study group. Of these, 208 were vaccinated at health department clinics or by private physicians and 62 were not vaccinated. Those women who were vaccinated before clinic admission were practically all less than 3 months pregnant at the time of vaccination. The women attending prenatal clinic at the time of vaccination were practically all more than 3 months pregnant when vaccination occurred. Although the two groups are quite different with respect to period of gestation at vaccination and length of observation, they are combined for purposes of computing the rates of congenital malformation, stillbirth and infant death. They are kept separate in computing the abortion rates.

Table 1 shows the result of vaccination and the period of gestation at vaccination for the entire group of 893 women. It will be noted

Table 1. *Stage of gestation at time of vaccination*

Stage of gestation at vaccination or Apr. 30, 1947	Number of cases				
	Total	Not vaccinated	Vaccinated		
			No reaction	Accelerated reaction	Primary take
0-3 months.....	313	66	60	74	113
3-6 months.....	320	53	55	76	136
6 months and over.....	260	54	34	60	112
Total	893	173	149	210	361
	Percentage distribution				
0-3 months.....	35.1	38.2	40.3	35.2	31.3
3-6 months.....	35.8	30.6	36.9	36.2	37.7
6 months and over.....	29.1	31.2	22.8	28.6	31.0
Total	100.0	100.0	100.0	100.0	100.0

that the four groups, "not vaccinated", "no reaction," "accelerated reaction," and "primary take," are distributed quite similarly with respect to period of pregnancy at which mass vaccination occurred. Table 2 shows the age composition of the four groups. The "not vaccinated" and "primary take" groups were somewhat older than the other two. The differences, both in period of pregnancy at vaccination and in age, are so small, however, that they can be ignored in comparing rates of abortion, stillbirth, congenital malformation and infant death for the four groups.

Table 2. *Maternal age at time of vaccination*

Age	Number of cases				
	Total	Not vaccinated	Vaccinated		
			No reaction	Accelerated reaction	Primary take
Under 25 years.....	282	55	50	82	95
25-29 years.....	263	45	51	67	100
30-34 years.....	206	49	34	36	87
35 years and over.....	142	24	14	25	79
Total.....	893	173	149	210	361
	Percentage distribution				
Under 25 years.....	31.6	31.8	33.6	39.0	26.3
25-29 years.....	29.5	26.0	34.2	31.9	27.7
30-34 years.....	23.1	28.3	22.8	17.1	24.1
35 years and over.....	15.9	13.9	9.4	11.9	21.9
Total.....	100.0	100.0	100.0	100.0	100.0

Congenital malformation rates according to vaccination status are shown in table 3. Three percent of all pregnancies were found to result in definite congenital malformations. The rates for women not vaccinated and for those who had primary reactions were about equal and somewhat lower than the rates for women who had no reaction or an accelerated reaction. None of the differences observed, however, is statistically significant.

Table 3. *Incidence of congenital malformations in offspring of vaccinated and unvaccinated pregnant women*

	Total pregnancies	Number congenital malformations	Percent congenital malformations
Not vaccinated.....	173	4	2.3
No reaction.....	149	7	4.7
Accelerated reaction.....	210	8	3.8
Primary take.....	361	8	2.2
Total.....	893	27	8.0

Table 4 shows the stillbirth rates among women who had reached the fifth month of pregnancy without an abortion. A stillbirth is defined as an infant born dead after 5 or more months of gestation. The incidence of stillbirths varied from 2.3 percent among women with primary takes to 4.3 percent among women with accelerated reactions. Although the "not vaccinated" and "primary take" groups had lower rates than the other two, the differences observed are not significant.

Table 4. Incidence of stillbirths among vaccinated and unvaccinated pregnant women

	Total pregnancies reaching fifth month	Number stillbirths	Percent stillbirths
Not vaccinated.....	169	4	2.4
No reaction.....	144	6	4.2
Accelerated reaction.....	207	9	4.3
Primary take.....	354	8	2.3
Total.....	874	27	3.1

Abortion rates among women less than 5 months pregnant at the time of vaccination are shown in table 5. An abortion is defined as a fetus delivered before the fifth month of gestation. There are two separate groups of patients in the study—those attending clinic at the time of vaccination, and those admitted to clinic after vaccination. The latter group was vaccinated earlier in pregnancy, and the average period of clinic observation during which abortion could have oc-

Table 5. Abortion rates among women in first half of pregnancy at time of vaccination

	Attending clinic on Apr. 30, 1947			Admitted to clinic after Apr. 30, 1947		
	Number less than 5 months pregnant at vaccination	Number abortions	Percent abortions	Number less than 5 months pregnant at vaccination	Number abortions	Percent abortions
Not vaccinated.....	41	2	4.9	62	2	3.2
No reaction.....	44	1	2.3	55	4	7.3
Accelerated reaction.....	62	2	3.2	67	1	1.5
Primary take.....	114	3	2.6	86	4	4.7
Total.....	261	8	3.1	270	11	4.1

curred is longer than for those vaccinated in clinic; in fact, a higher abortion rate did occur in the group observed for the longer period (4.1 percent compared with 3.1 percent), but these differences are not significant. From table 5 it is evident that vaccination results in no significant differences in abortion rates.

Most of the women who were vaccinated in the first or second month of pregnancy were vaccinated before clinic admission and could not be observed for abortion immediately following vaccination. In-

deed, the fetus had to survive the period from vaccination to clinic admission in order for the women to be included in the study. There is, however, some evidence to support the conclusion that vaccination in very early pregnancy does not result in immediate abortion. The percentage of women vaccinated was approximately the same among the group attending clinic at the time of the mass vaccination (82.2 percent) and among those admitted to clinic after this period (77.0 percent). Six women were vaccinated in clinic in the second month of pregnancy and all of these women were delivered of normal infants at term.

The death rates under 1 month of age among infants born alive are shown in table 6. Although the infant death rates varied from 0.6 percent among the nonvaccinated to 1.7 percent among those with primary takes, the differences are not significant.

Table 6. *Incidence of infant deaths among live offspring of vaccinated and unvaccinated pregnant women*

	Total live births	Number of infant deaths	Percent of infant deaths
Not vaccinated.....	165	1	0.6
No reaction.....	138	2	1.4
Accelerated reaction.....	198	3	1.5
Primary take.....	346	6	1.7
Total.....	847	12	1.4

Conclusion

A total of 893 pregnant women were observed, of whom 720 were vaccinated and 173 were unvaccinated. On the basis of the evidence presented in this study, it is concluded that smallpox vaccination during pregnancy does not increase the incidence of congenital malformations, stillbirths, abortions, or of infant deaths.

ACKNOWLEDGMENT

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INCIDENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDING FEBRUARY 19, 1949

A total of 19,619 cases of measles was reported for the week, as compared with 20,322 last week and a 5-year (1944-48) median of 13,932. Of the current total, 13,167 cases (67 percent) occurred in the New England, Middle Atlantic, South Atlantic, and West South Central areas. The largest increase (from 3,274 to 3,847) was recorded in the Middle Atlantic area, while decreases occurred in the West North Central, South Atlantic, South Central, and Pacific areas. Of the 13 States reporting currently more than 487 cases, none showed an increase of more than 137 except Pennsylvania (from 1,422 to 1,761). The total to date is 109,234, 5-year median 53,474.

A slight decline was recorded in the incidence of influenza. The current total is 4,792, as compared with 4,905 last week and 7,199 for the 5-year median. Reports of the 4 States previously reporting the largest numbers (no other State reporting more than 151 cases) are as follows (last week's figures in parentheses): Virginia 329 (431), South Carolina 920 (652), Arkansas 235 (294), Texas 2,330 (2,612). The total for the year to date is 32,208, as compared with 27,425 (the least corresponding figure of the past 5 years) reported in 1947, and a 5-year median of 83,183.

Of 68 cases of poliomyelitis reported for the week (last week 62, 5-year median 33), 10 each occurred in Minnesota and California, 7 in Texas, 5 each in Illinois and Washington, and 4 each in New Jersey and Kansas. The total of 703 cases reported for the first 7 weeks of the year (5-year median 288) is more than reported for any corresponding period of the past 5 years.

During the week 2 cases of smallpox were reported—1 each in Ohio and Louisiana. The total for the year to date is 8 cases, as compared with 22 for the same period last year and a 5-year median of 50.

A total of 9,819 deaths was recorded during the week in 94 large cities in the United States, as compared with 10,057 last week, 10,688 and 9,741, respectively, for the corresponding weeks of 1948 and 1947, and a 3-year (1946-48) median of 9,741. The total for the year to date is 69,828, same period last year 73,891. Infant deaths for the week totaled 609, last week 672, 3-year median 776. The cumulative figure is 4,760, same period last year 5,121.

Telegraphic case reports from State health officers for week ended Feb. 19, 1949

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Polio-myelitis	Rocky Mountain spotted fever	Scarlet fever	Small-pox	Tularemia	Typhoid and paratyphoid fever	Whooping cough	Rabies in animals
NEW ENGLAND														
Maine.....	1		27	443		14			18				6	
New Hampshire.....			2	1		2			1					
Vermont.....				302		14			4				8	
Massachusetts.....	8			1,396					360				65	
Rhode Island.....				393		11			12				2	
Connecticut.....			35	407	1	89			55				3	
MIDDLE ATLANTIC														
New York.....	10		b 2	1,482	6	365			c 276			3	130	8
New Jersey.....	4		3	604	2	82	4		174			1	52	2
Pennsylvania.....	19		(b)	1,761	12		1		216			2	74	1
EAST NORTH CENTRAL														
Ohio.....	10		1	72	3	70			358	1			41	12
Indiana.....	7	1	16	64	3	29	1		53			3	8	23
Illinois.....	13		13	85	3	154	5		236		1		44	8
Michigan.....	1		5	599	5	84	1		366				46	1
Wisconsin.....			151	789		10	1		85			2	39	1
WEST NORTH CENTRAL														
Minnesota.....	5			72	4	3	10		117				2	
Iowa.....	2			22		4	1		32				5	4
Missouri.....	4		6	487		5			22		1	1	1	
North Dakota.....				71					13				4	
South Dakota.....	1			20			3		10			1		
Nebraska.....			1	12	1	17	4		6		2		15	
Kansas.....	6		1	625					32			3	5	
SOUTH ATLANTIC														
Delaware.....				12	2		1		12				4	
Maryland.....	3		3	1,130	3	47			35			1	4	
Dist. of Col.....	1			87		14			8			2	1	
Virginia.....	4		329		2	91			9		1	2	8	2
West Virginia.....	2		58	211	2	28			36			2	76	
North Carolina.....	6			414	2		1		29		3	2	15	
South Carolina.....	8		920	234	3	271	2		6		4	1	26	5
Georgia.....	3		16	234		23			3		3		1	11
Florida.....	16		26	121	1	15	2		4		1	3	12	4

See footnotes at end of table.

Telegraphic case reports from State Health officers for week ended Feb. 19, 1949—Continued

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Polio-myelitis	Rocky Mountain spotted fever	Scarlet fever	Small-pox	Tularemia	Typhoid and paratyphoid fever ^d	Whooping cough	Rabies in animals
EAST SOUTH CENTRAL														
Kentucky.....	5		11	539	6	58	2		59			2	26	
Tennessee.....	2		43	198	1	57			17		4			
Alabama.....	4		68	364	3	87	2		11			2	12	8
Mississippi ^a	7	1	30	62	1	44			4		8		13	
WEST SOUTH CENTRAL														
Arkansas.....	1		235	437	1	140	1		9			1	5	6
Louisiana.....	5		6	63	1	44			5	1		1	2	1
Oklahoma.....	2		85	244	3	65			26			2	5	4
Texas.....	20	1	2,330	2,664	7	606	7		39			8	130	30
MOUNTAIN														
Montana.....			7	60	1	35			21				3	
Idaho.....		2	2	46		5	1		18				2	
Wyoming.....				22		2			20				2	
Colorado.....	1		36	327	2	46			24			1	8	1
New Mexico.....			4	179	1	23			11				3	
Arizona.....	3		131			27	1		5				10	
Utah ^a			1	91		6	2		6				18	
Nevada.....						4								
PACIFIC														
Washington.....	1		120	415		3	5		98			1	8	
Oregon.....	2		10	522	1	34			17				16	
California.....	8		49	709	5	16	10		59			1	8	
Total.....	192	5	4,792	19,610	88	2,744	68	1	3,030	2	34	48	978	
Median, 1944-48.....	288	9	7,199	13,932	173		33		3,618	6	17	42	2,095	
Year to date, 7 weeks.....	1,310	53	32,208	109,234	608	16,477	703	8	19,007	8	236	285	7,469	
Median, 1944-48.....	2,106	53	83,183	181,474	1,468		288	3	31,094	50	155	292	15,733	
Seasonal low, week ends.....	July 10		July 31	(35th)	(37th)		(11th)	(35th)	(32nd)	(36th)		(11th)	(39th)	
Since seasonal, low week.....	6,424		68,478	161,627	1,462		29,050	Mar. 20	41,705	23		Mar. 20	17,502	
Median, 1943-48.....	9,732		126,741	79,588	2,972		13,050	Apr. 4	59,665	126		4,532	41,405	

^a Period ended earlier than Saturday.
^b New York City and Philadelphia only, respectively.
^c Including cases reported as streptococcal infection and septic sore throat.
^d Including paratyphoid fever, reported separately, as follows: Colorado 1; salmonella infections, not included, were reported separately as follows: New York 1, Alaska; Measles 2; streptococcal sore throat 6.
 Territory of Hawaii: Influenza 65; measles 222; lobar pneumonia 1; additional, week ended to February 12, influenza 69; measles 15; scarlet fever 1.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended February 5, 1949.—During the week ended February 5, 1949, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox.....		31	1	228	785	35	62	74	222	1,438
Diphtheria.....			1	15	1			4		21
Dysentery:										
Amebic.....						2				2
Bacillary.....				2						2
German measles.....				94	11		3	6	10	124
Influenza.....		26			22	2	1		1	52
Measles.....		421	75	307	336	161	205	259	142	1,906
Meningitis, meningococcal.....		2					1			3
Mumps.....		17		118	194	44	45	52	150	620
Scarlet fever.....		9	4	149	95	3	15	6	12	293
Tuberculosis (all forms).....		13	17	133	20	15	10	20	35	263
Typhoid and paratyphoid fever.....		6	1	8	2				1	18
Undulant fever.....					5					5
Veneral diseases:										
Gonorrhoea.....	2	18	5	79	75	19	21	27	49	295
Syphilis.....	2	10	8	85	45	8	7	11	10	186
Other forms.....									1	2
Whooping cough.....		8	1	198	33	3	15	7	4	269

FINLAND

Notifiable diseases—December 1948.—During the month of December 1948, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	6	Poliomyelitis.....	8
Diphtheria.....	205	Scarlet fever.....	304
Dysentery, unspecified.....	1	Syphilis.....	175
Gonorrhoea.....	99	Typhoid fever.....	13
Paratyphoid fever.....	99		

NEW ZEALAND

Poliomyelitis for the year 1948.—During the year 1948, poliomyelitis was reported in New Zealand as follows: For the first three quarters of the year, 39 weeks ended September 27, 1948, 885 cases, 36 deaths (see Public Health Reports for January 28, 1949, page 114); for the fourth quarter, 14 weeks ended January 3, 1949, 285 cases, 14 deaths; total number of cases reported for the year, 1,170, with 50 deaths.

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India—Calcutta.—Cholera has been reported in Calcutta, India, as follows: Week ended January 29, 1949, 169 cases, 59 deaths; week ended February 5, 204 cases, 54 deaths.

Plague

India—Cawnpore.—During the week ended February 5, 1949, 14 cases of plague, with 4 deaths, were reported in Cawnpore, India.

Indochina (French)—Cambodia—Pnompenh.—During the week ended February 5, 1949, 4 cases of plague were reported in Pnompenh, Cambodia, French Indochina.

Madagascar.—During the period January 1–31, 1949, 23 cases of plague, with 18 deaths, were reported in Madagascar.

Smallpox

Bahrein Islands—Bahrein.—During the week ended February 5, 1949, 5 cases of smallpox were reported in the port of Bahrein in the Bahrein Islands.

India—Bombay and Ahmedabad.—Smallpox has been reported in the cities of Bombay and Ahmedabad, India, as follows: Bombay, week ended January 29, 1949, 25 cases, 5 deaths, week ended February 5, 32 cases, 7 deaths; Ahmedabad, week ended January 29, 1949, 99 cases, 52 deaths.

Indochina (French).—Smallpox has been reported in French Indochina as follows: Annam State, week ended January 29, 1949, 50 cases, 20 deaths; Luang-Prabang Province, Laos State, week ended February 5, 1949, 12 cases, 3 deaths.

Netherlands Indies—Java—Batavia.—During the period January 10–February 6, 1949, 273 cases of smallpox were reported in Batavia, Java, Netherlands Indies.

Turkey.—During the week ended February 12, 1949, 20 cases of smallpox with 7 deaths were reported in Turkey, and 18 cases were reported during the week ended February 5.

Yellow Fever

Panama—Pacora.—Of the 8 cases of yellow fever with 6 deaths reported January 17, 1949, in the region of Pacora, Panama (see Public Health Reports for February 4, 1949, p. 158), 3 additional cases have been confirmed. All of the cases are stated to have been infected in the jungle. The first case occurred November 11, 1948, and the last case was fatal December 30.

Peru—San Martin Department—Saposo.—Delayed report: On July 11, 1948, 1 fatal case of yellow fever was reported in Saposo, Saposo Province, San Martin Department, Peru.

DEATHS DURING WEEK ENDED FEB. 12, 1949

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Feb. 12, 1949	Correspond- ing week, 1948
Data for 94 large cities of the United States:		
Total deaths.....	10,057	10,071
Median for 3 prior years.....	10,071	-----
Total deaths, first 6 weeks of year.....	60,009	63,203
Deaths under 1 year of age.....	672	678
Median for 3 prior years.....	670	-----
Deaths under 1 year of age, first 6 weeks of year.....	4,151	4,345
Data from industrial insurance companies:		
Policies in force.....	70,621,674	66,861,796
Number of death claims.....	13,755	10,735
Death claims per 1,000 policies in force, annual rate.....	10.2	8.4
Death claims per 1,000 policies, first 6 weeks of year, annual rate.....	9.8	10.7